Application No. 10/608,766 Inventors: Eran Steinberg

Application Filed: 06-26-2003

Response to Office Action mailed **04-13-2007**

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of digital image processing using face detection,

comprising:

a. identifying a <u>first</u> group of pixels that correspond to a face within a digital image

including comparing one or more detected luminance variations between sub-groups

within said first group of pixels with one or more expected luminance variations of digital

facial images;

b. identifying a second group of pixels that correspond to another feature within the

digital image; and

determining a re-compositioned image including a new group of pixels for at least

one of the face and the other feature, wherein the new group of pixels is determined

based on one or more characteristics of the first or second groups of pixels, or both.

2. (original) The method of claim 1, wherein said method is performed within a digital

image acquisition device as part of the acquisition process.

3. (original) The method of claim 2, wherein said determining a re-compositioned image

includes displaying the re-compositioned image within said digital image acquisition device

prior to capturing the image.

4. (original) The method of claim 3, further comprising a user approving the re-

compositioned image prior to said capturing of the image.

5. (original) The method of claim 2, wherein said determining a re-compositioned image

includes displaying the re-compositioned image within said digital image acquisition device

prior to acquiring the image.

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6. (original) The method of claim 5, further comprising a user approving the re-

compositioned image prior to said acquisition of the image.

7. (original) The method of claim 2, wherein said determining a re-compositioned image

includes displaying the re-compositioned image within said digital image acquisition device as

part of a playback mode.

8. (currently amended) The method of claim 1, wherein the other feature comprises

comprising an eye, a lip, nose, an ear, hair line, nose bridge, chin, neck, shoulder, or torso, or

combinations thereof.

9. (currently amended) The method of claim 1, wherein the other feature comprises

comprising at least one additional face.

10. (original) The method of Claim 1, further comprising displaying one or more grid lines

on the re-compositioned image to assist a user in evaluating the re-compositioned image.

11. (original) The method of claim 10, wherein said one or more grid lines are based on

composition aesthetics guidelines.

12. (original) The method of claim 1, further comprising automatically generating the

determined re-compositioned image.

13. (original) The method of claim 1, further comprising automatically providing one or

more re-composition options for generating the determined re-compositioned image.

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14. (original) The method of claim 13, further comprising:

- a. displaying a plurality of re-composition options; and
- b. allowing the user to select an instance of said plurality of options.
- 15. (original) The method of claim 1, further comprising determining values of one or more parameters of the first and second groups of pixels and determining relatively-adjusted values.
- 16. (original) The method of claim 15, further comprising automatically generating an adjusted image using the relatively-adjusted values of the one or more parameters of the first and second groups of pixels.
- 17. (original) The method of claim 15, further comprising automatically providing an option to generate an adjusted image using the relatively-adjusted values of the one or more parameters of the first and second groups of pixels.
- 18. (currently amended) One or more processor readable storage devices having processor readable code embodied thereon, said processor readable code for programming one or more processors to perform a method of digital image processing using face detection, the method comprising:
 - a. identifying a group of pixels that correspond to a face within a digital image including comparing one or more detected luminance variations between sub-groups within said first group of pixels with one or more expected luminance variations of digital facial images;
 - b. identifying a second group of pixels that correspond to another feature within the digital image; and
 - c. determining a re-composited image including a new group of pixels for at least one of the face and the other feature, wherein the new group of pixels is determined based on one or more characteristics of the first or second group of pixels, or both.

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19. (original) The one or more storage devices as recited in claim 18, wherein said processor

is located within a digital image acquisition device.

20. (original) The one or more storage devices as recited in claim 18, wherein said method is

performed within a digital image acquisition device as part of an acquisition process.

21. (original) The one or more storage devices of claim 20, wherein said determining a re-

compositioned image includes displaying the re-compositioned image within said digital image

acquisition device prior to capturing the image.

22. (currently amended) The one or more storage devices of claim 21, the method further

comprising a user approving the re-compositioned image prior to said capturing of the image.

23. (original) The one or more storage devices of claim 21, wherein said determining a re-

compositioned image includes displaying the re-compositioned image within said digital image

acquisition device prior to acquiring the image.

24. (currently amended) The one or more storage devices of claim 23, wherein the method

further comprises comprising a user approving the re-compositioned image prior to said

acquisition of the image.

25. (original) The one or more storage devices of claim 21, wherein said determining a re-

compositioned image includes displaying the re-compositioned image within said digital image

acquisition device as part of a playback mode.

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26. (currently amended) The one or more storage devices of claim 18, wherein the other

feature comprising an eye, a lip, nose, an ear, hair line, nose bridge, chin, neck, shoulder, or

torso, or combinations thereof.

27. (currently amended) The one or more storage devices of claim 18, wherein the other

feature comprises comprising at least one additional face.

28. (currently amended) The one or more storage devices of claim 18, wherein the method

further comprising displaying one or more grid lines on the re-compositioned image to assist a

user in evaluating the re-compositioned image.

29. (original) The one or more storage devices of claim 28, wherein said one or more grid

lines are based on composition aesthetics guidelines.

30. (currently amended) The one or more storage devices of claim 18, wherein the method

further <u>comprises</u> emprising automatically generating the determined re-compositioned image.

31. (original) The one or more storage devices of claim 18, further comprising automatically

providing one or more re-composition options for generating the determined re-compositioned

image.

32. (currently amended) The one or more storage devices of claim 31, wherein the method

further comprises comprising:

a. displaying a plurality of re-composition options; and

b. allowing the user to select an instance of said plurality of options.

33. (currently amended) The one or more storage devices of claim 18, wherein the other

feature comprises comprising a second face.

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34. (currently amended) The one or more storage devices of claim 18, wherein the method

further comprises comprising automatically generating the determined re-composited image.

35. (currently amended) The one or more storage devices of claim 18, wherein the method

further comprises comprising automatically providing an option for generating the determined

re-composited image.

36. (currently amended) The one or more storage devices of claim 18, wherein the method

further comprises comprising determining values of one or more parameters of the first and

second groups of pixels and determining relatively-adjusted values.

37. (currently amended) The one or more storage devices of claim 36, wherein the method

further comprises comprising automatically generating an adjusted image using the relatively-

adjusted values of the one or more parameters of the first and second groups of pixels.

38. (currently amended) The one or more storage devices of claim 36, wherein the method

further <u>comprises</u> emprising automatically providing an option to generate an adjusted image

using the relatively-adjusted values of the one or more parameters of the first and second groups

of pixels.

39. (new) The method of claim 1, wherein the new group of pixels comprises a replacement

of substantially all of the pixels in the first group.

40. (new) The method of claim 39, wherein the new group of pixels is provided by applying

fill flash or auto-focus, or both, to the face.

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41. (new) The method of claim 39, wherein the new group of pixels is provided by applying zooming or panning, or both, to the face.

42. (new) The one or more storage devices as recited in claim 18, wherein the new group of pixels comprises a replacement of substantially all of the pixels in the first group.

43. (new) The one or more storage devices as recited in claim 42, wherein the new group of pixels is provided by applying fill flash or auto-focus, or both, to the face.

44. (new) The one or more storage devices as recited in claim 42, wherein the new group of pixels is provided by applying zooming or panning, or both, to the face.